NATURAL RESOURCES AND THE ENVIRONMENT

The Cooperative State Research, Education, and Extension Service advances knowledge for agriculture, the environment, human health and well-being, and communities. Natural Resources and Environment programs and activities reach across the entire Agency mission, integrating research, education, and extension expertise to provide innovative solutions that are economically sound and environmentally advantageous.

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Agroecology, Ecosystems, and Invasive Species: Ecosystems provide goods and services that are critical for human existence. To function efficiently, an ecosystem's living constituents must be in balance with the available resources and conditions. This balance can be adversely affected by disturbances, such as disease, predators, fire, invasive species, and human activity. The ecosystems program goals are to understand the impact of agriculture, forest, and rangeland practices on ecological health and development and to promote the sustainability of food, fiber, and forage production. Contact: **Michael Bowers** at 202-401-4510 or mbowers@screes.usda.gov. http://www.csrees.usda.gov/ecosystems

Air Quality: Agricultural producers face increasing regulatory pressures. The air quality program goal is to provide sound science that protects the environment while maintaining a viable agricultural production system. Research focuses on developing emission data for agricultural production practices and improving understanding of odor, gases, and particulate matter measurement, fate, and transport. Also targeted are emissions and mitigation of other greenhouse gases, such as nitrous oxide and methane. Contact: **Ray Knighton** at 202-401-6417 or rknighton@csrees.usda.gov. http://www.csrees.usda.gov/airquality

Conservation: Conservation programs with a broad spectrum of research and science-based education help agricultural producers and private landowners manage their natural resources and improve environmental quality. Land-grant university scientists and extension educators develop and implement outreach and technology transfer programs that significantly complement and enhance national environmental goals established under Conservation Reserve, Environmental Quality Incentives, and Conservation Security programs. CSREES is helping conduct a national assessment of environmental benefits achieved through practices supported by USDA conservation programs. Contact: **Mary Ann Rozum** at 202-401-4533 or mrozum@csrees.usda.gov; **Fen Hunt** at 202-720-4114 or fhunt@csrees.usda.gov. http://www.csrees.usda.gov/environmentalresourceeconomics

Cooperative Forestry/Graduate Education: Through the Cooperative Forestry program, 65 forestry schools and colleges participate in research that addresses production, protection, and utilization of forest resources and associated rangelands. Nearly 1,000 scientists work on projects from the molecular to the landscape level. Knowledge and technologies developed are worth billions of dollars in direct and indirect benefits. Funding has supported 22,500 years of graduate student forestry studies, leading to 7,500 masters and 2,200 doctoral degrees. Contact: **Catalino Blanche** at 202-401-4190 or cblanche@csrees.usda.gov. http://www.csrees.usda.gov/forests

Fish and Wildlife: Land and aquatic wildlife are natural components of agriculture, forest, and range lands, contributing to proper ecological functioning, providing income to landowners and businesses, and affording recreational and aesthetic benefits to society. The fish and wildlife program goal is to achieve balance between societal and wildlife use of land and water resources. CSREES supports 400 plus research projects at land-grant universities and coordinates public extension education in every state. Priorities include biodiversity conservation, habitat management, and control of wildlife damage, invasive species, and disease transmission. Contact: **Bruce Menzel** at 202-401-5016 or bmenzel@csrees.usda.gov. http://www.csrees.usda.gov/fishwildlife

Forest Resources-Healthy Forests: Forestland is nearly one-third of the U.S. landmass and is mostly privately owned. Research and extension programs address high priority and emerging issues, such as forest health, homeland security, reforestration, wildland fires prevention and restoration, timber harvesting, sustainability, production efficiency, biodiversity, and water quality and quantity. Contact: **Eric Norland** at 202-401-5971 or enorland@csrees.usda.gov. http://www.csrees/usda.gov/forests

Global Change and Climate: Land-based systems interact in a dynamic manner with short and long-term changes in climate variations contributing to regional and global change. Agricultural impacts include potential effects on land use, water cycle, carbon sequestration, and ecosystem dynamics. The global change and climate program addresses effects on food, fiber, and forestry production, and vulnerability in agricultural, forest, and range ecosystems, which are critical to agriculture's competitiveness and sustainability. Contact: **Louie Tupas** at 202-401-4926 or ltupas@csrees.usda.gov. http://www.csrees.usda.gov/globalchange

Manure/Nutrient Management: Nutrient management for Concentrated Animal Feeding Operations is a priority under federal EPA Clean Water Act effluent standards. Proper storage, handling, and land application of animal manure and carcasses, and dietary management to reduce excess nutrients can prevent leaching, runoff, and toxic buildup. See http://www.cals.ncsu.edu:8050/waste_mgt/natlcenter/center.htm for CSREES-funded National Center for Manure and Animal Waste. For university curriculum, see http://www.lpes.org. Contact: **Mary Ann Rozum** at 202-401-4533 or mrozum@csrees.usda.gov. http://www.csrees.usda.gov/manurenutrientmanagement

Rangeland Resources: Rangelands provide water, watershed protection, forage, recreation, wildlife habitat, some timber resources, open space, aesthetics, and a vast airshed. Sustainable stewardship research and education address issues, such as water quality/quantity, weed invasion and plant community stability, fire management and frequency, habitat fragmentation from urban sprawl, and conflict resolution among opposing land uses. Contact: **Bruce Menzel** at 202-401-5016 or bmenzel@csrees.usda.gov; **John Buckhouse** at 541-737-1629 or john.c.buckhouse@oregonstate.edu. http://www.csrees.usda.gov/rangelands

Renewable Resources: Renewable resources programs support the educational needs of 10 million private forest owners and managers. Programs feature rural and urban forest management, agroforestry, product utilization, wildlife and fisheries management, outdoor recreation, public policy, and continuing education for resource professionals. Outcomes include 500,000 woodland owner contacts, improved forest management of 21 million acres, $160 million in increased revenues from forest and wildlife management practices, 100,000 hours of continuing education training to 25,000 natural resource professionals, and 50,000 teachers trained in environmental science. Contact: **Eric Norland** at 202-401-5971 or enorland@csrees.usda.gov. http://www.csrees.usda.gov/forests

Soils and Soil Ecology: The Soil Ecology program is a research, education, and extension forum for colleges and universities to investigate and disseminate knowledge about the interaction between and among physical, biological, and chemical factors and processes in the soil. The ultimate goal is to provide a safe, healthy and economical food and fiber production system while conserving and preserving environmental quality. Contact: **Mervalin Morant** at 202-401-6602 or mmorant@csrees.usda.gov. http://www.csrees.usda.gov/soils

Sustainable Development: The Sustainable Development program works toward the economic, environmental, and social sustainability of diverse food, fiber, agriculture, forest, and range systems. Priorities include stewardship of the natural resource base and ecological systems. Contact: **Greg Crosby** at 202-401-6050 or gcrosby@csrees.usda.gov. http://www.csrees.usda.gov/sustainabledevelopment

Water Quality: The Water Quality program provides solutions to rural and agricultural watershed issues by integrating research, extension, and education activities at land-grant universities and other institutions. Ten regions work with CSREES through a Committee for Shared Leadership for Water Quality, increasing access to university expertise and knowledge. Contact: **Mike O'Neill** at 202-205-5952 or moneill@csrees.usda.gov. http://www.csrees.usda.gov/water

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